

What is claimed is:

1. A recording/reproducing apparatus receiving digital broadcasting comprising:

5 receiving means for receiving a transport stream containing control data for realizing interactive operations;

converting means for generating a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received;

10 recording means for recording the stream from the converting means on a recording medium;

readout means for reading out the stream recorded on the medium;

operation handing means for handing operations made by an operator;

and

15 reproducing means for reproducing signals representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a receive mode and receiving a transport stream from the readout means when the apparatus is in a playback mode, wherein the reproducing means outputs the reproduced signals;

20 wherein the playback mode includes a normal playback mode and a special playback mode;

and wherein the reproducing means carries out an interactive operation in which the reproducing means outputs an image for performing operations in accordance with control data contained in the transport stream being received and changes the signal representing contents of the services being outputted in accordance with input of the operator when the apparatus  
25 is in the receive mode and the normal playback mode;

and wherein the reproducing means not carries out the interactive operation when the apparatus is in the special playback mode.

30 2. The apparatus in accordance with claim 1, wherein the converting means generates a data stream for reproduction containing a data stream for

the normal playback and a data stream for the special playback;

and wherein the reproducing means reproduces signals representing contents of services reproduced under the normal playback mode in accordance with the data stream for the normal playback when the apparatus  
5 is in the normal playback mode;

and wherein the reproducing means reproduces signals representing contents of services reproduced under the special playback mode in accordance with the data stream for the special playback when the apparatus is in the special playback mode.

10 3. The apparatus in accordance with claim 2, wherein the converting means generates a data stream for special playback not containing the image for performing operations and a control command, both of the image and the command being used for performing interactive operations;

15 and wherein the reproducing means not displays the image for performing operations when the apparatus is in the special playback mode.

20 4. The apparatus in accordance with claim 2, wherein the converting means generates a data stream for special playback containing the image for performing operations and not contains a control command, both of the image and the command being used for performing interactive operations;

and wherein the reproducing means displays the image for performing operations when the apparatus is in the special playback mode.

25 5. The apparatus in accordance with claim 2, wherein the converting means further includes data for detecting whether or not a version of control data for performing the interactive operations is upgraded into the data stream for special playback;

30 and wherein the reproducing means suspends display of the image for performing operations when upgrade of the control data is detected according to the detecting data during the special playback mode.

6. The apparatus in accordance with claim 3, wherein the reproducing means outputs a signal for notifying the suspension to the operator when display of the image is suspended thereby.

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7. The apparatus in accordance with claim 2, wherein the converting means generates a data stream for special playback which contains the image for performing operations and not contains a control command, both of the image and the command being used for performing interactive operations;

10 and wherein the reproducing means switches whether or not displaying the image for performing operations in accordance with input of the operator when the apparatus is in the special playback mode.

15 8. A digital receiving apparatus for outputting data for recording a desired service by receiving a transport stream comprising:  
receiving means for receiving the transport stream being packetized containing control data for realizing interactive operations;

20 converting means for generating a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received; and

a recording data output terminal for providing the data stream for reproduction from the converting means to a memory device;

25 wherein the converting means generates a data stream for reproduction containing a data stream for normal playback and a data stream for special playback, the data stream for special playback not containing a control command used for performing interactive operations.

9. A digital video recording apparatus for recording a desired service by receiving a transport stream comprising:

30 converting means for generating a data stream for reproduction containing control data for realizing interactive operations by selecting

packets as to a desired service selected from the transport stream being received; and

recording means for recording the stream from the converting means on a recording medium;

5 wherein the converting means generates a data stream for reproduction containing a data stream for normal playback and a data stream for special playback, the data stream for special playback not containing a control command used for performing interactive operations.

10 10. The apparatus in accordance with claim 8, wherein the converting means generates a data stream for special playback not containing an image for interactive operations.

15 11. The apparatus in accordance with claim 8, wherein the converting means generates a data stream for special playback containing an image for interactive operations.

20 12. The apparatus in accordance with claim 1, wherein the converting means generates a data stream for reproduction containing a data stream for the normal playback and not containing a data stream for the special playback;

25 and wherein the reproducing means reproduces signals representing contents of services reproduced under the normal playback mode in accordance with the data stream for the normal playback when the apparatus is in the normal playback mode;

and wherein the reproducing means reproduces signals representing contents of services reproduced under the special playback mode in accordance with the data stream for the special playback when the apparatus is in the special playback mode.

30 13. The apparatus in accordance with claim 12, wherein the

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reproducing means generates a service contents signal for special playback not containing an image and a control command when the apparatus is in a special playback mode, both of the image and the command being used for performing interactive operations;

5           and wherein the reproducing means not displays the image for performing the interactive operations.

14.   The apparatus in accordance with claim 12, wherein the reproducing means generates a service contents signal for special playback  
10   containing an image for interactive operations and not containing a control command for interactive operations when the apparatus is in the special playback mode;

          and wherein the reproducing means displays the image.

15           15.   The apparatus in accordance with claim 12, wherein the reproducing means detects whether or not control data for performing interactive operations is upgraded in the data stream for special playback;

          and wherein the reproducing means suspends display of the image for  
20   performing the interactive operations when upgrade of the control data is detected.

16.   The apparatus in accordance with claim 13, wherein the reproducing means outputs a signal for notifying the suspension to the operator when display of the image is suspended thereby.

25           17.   In a digital transmitting apparatus for transmitting a transport stream containing control data for realizing interactive operations:

          wherein the apparatus transmits the transport stream so as to contain  
30   a special stream for special playback.

18.   A recording/reproducing apparatus receiving digital broadcasting

comprising:

receiving means for receiving the transport stream containing control data for realizing interactive operations and a special stream for special playback;

5        converting means for generating a data stream for normal playback containing the control data in accordance with packets as to a desired service selected from the transport stream being received and a data stream for special playback in accordance with the special stream;

10       recording means for recording the data stream and the stream for special playback both from the converting means on a recording medium as a data stream for reproduction;

readout means for reading out the stream for reproduction recorded on the medium;

15       operation handing means for handing operations made by an operator;  
and

20       reproducing means for reproducing a signal representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a receive mode and receiving a transport stream from the readout means when the apparatus is in a playback mode, wherein the reproducing means outputs the reproduced signals;

25       and wherein the reproducing means carries out an interactive operation in which the reproducing means outputs an image for performing operations in accordance with control data contained in the transport stream being received when the apparatus is in the receive mode and the normal playback mode;

and wherein the reproducing means reproduces service contents of the special playback in accordance with the stream for special playback and not carries out the interactive operations when the apparatus is in the special playback mode.

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19. A digital receiving apparatus for outputting data for recording a

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desired service by receiving a transport stream comprising:

receiving means for receiving the transport stream being packetized containing control data for realizing interactive operations and a special stream for special playback;

5 converting means for generating a data stream for normal playback containing the control data in accordance with packets as to a desired service selected from the transport stream being received and a data stream for special playback in accordance with the special stream; and

10 a recording data output terminal for providing the data stream for normal playback and the data stream for special playback both from the converting means to a memory device.

15 20. The apparatus in accordance with claim 17, wherein the special stream contains a control command for performing interactive operations.

21. The apparatus in accordance with claim 17, wherein the special stream not contains a control command for performing interactive operations.

20 22. The apparatus in accordance with claim 21, wherein the special stream not contains an image for interactive operations.

23. The apparatus in accordance with claim 21, wherein the special stream contains an image for interactive operations.

25 24. The apparatus in accordance with claim 20, wherein the data stream for special playback not contains a control command for performing interactive operations.

30 25. The apparatus in accordance with claim 24, wherein the data stream for special playback stream not contains an image for interactive operations.

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26. The apparatus in accordance with claim 24, wherein the data stream for special playback contains the control command for performing interactive operations.

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27. A digital video reproduction apparatus for reproducing services by reading out a stream for reproduction recorded on a recording medium comprising:

readout means for reading out the stream for reproduction recorded on  
10 the recording medium;

operation handing means for handing operations made by an operator;  
and

reproducing means for reproducing a signal representing contents of  
the services by receiving the stream for reproduction from the readout means,  
15 wherein the reproducing means outputs the reproduced signals;

wherein the reproducing means outputs an image for performing operations in accordance with control data for performing interactive operations contained in the stream for reproduction, and performs interactive operations so as to change a signal representing contents of the services responding to an input of the operator when the apparatus is in a normal playback mode;

and wherein the reproducing means not performs the interactive operations when the apparatus is in a special playback mode.

25           28. The apparatus in accordance with claim 27, wherein the reproducing means not displays the image for performing operations when the apparatus is in the special playback mode.

29. The apparatus in accordance with claim 27, wherein the  
30 reproducing means displays the image for performing operations when the  
apparatus is in the special playback mode.



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30. The apparatus in accordance with claim 29, wherein the reproducing means suspends display of the image for performing operations when upgrade of the control data is detected during the special playback mode.

31. The apparatus in accordance with claim 28, wherein the reproducing means outputs a signal for notifying the suspension to the operator when display of the image is suspended thereby.

32. The apparatus in accordance with claim 27, wherein the operator enables to choose whether or not displaying the image for performing operations when the apparatus is in the special playback mode.

33. A recording/reproducing apparatus receiving digital broadcasting comprising:

receiving means for receiving a transport stream containing control data for realizing interactive operations;

converting means for generating a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received;

recording means for recording the stream from the converting means on a recording medium;

readout means for reading out the stream recorded on the medium;

operation handing means for handing operations made by an operator; and

reproducing means for reproducing signals representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a receive mode and receiving a transport stream from the readout means when the apparatus is in a playback mode, wherein the reproducing means outputs the reproduced signals;

wherein the playback mode includes a normal playback mode and a special playback mode;

and wherein the reproducing means carries out an interactive operation in which the reproducing means outputs an image for performing operations in accordance with control data contained in the transport stream being received and changes the signal representing contents of the services being outputted in accordance with input of the operator when the apparatus is in the receive mode, the normal playback mode and the special playback mode.

34. The apparatus in accordance with claim 33, wherein the converting means generates a data stream for reproduction containing a data stream for the normal playback and a data stream for the special playback;

and wherein the reproducing means reproduces signals representing contents of services reproduced under the normal playback mode in accordance with the data stream for the normal playback when the apparatus is in the normal playback mode;

and wherein the reproducing means reproduces signals representing contents of services reproduced under the special playback mode in accordance with the data stream for the special playback when the apparatus is in the special playback mode.

35. The apparatus in accordance with claim 34, wherein the converting means makes control data for realizing interactive operations equivalent to the data stream for the normal playback so as to include into the data stream for the special playback;

and wherein the reproducing means carries out an interactive operation equivalent to that carried out in the normal playback mode.

36. The apparatus in accordance with claim 34, wherein the converting means generates the data stream for the special playback by

omitting a part of the control data;

and wherein the reproducing means carries out an interactive operation different from that carried out in the normal playback mode when the apparatus is in the special playback mode.

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37. A digital receiving apparatus for outputting data for recording a desired service by receiving a transport stream comprising:

receiving means for receiving the transport stream containing control data for realizing interactive operations;

10 converting means for generating a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received; and

a recording data output terminal for providing the data stream for reproduction from the converting means to a memory device;

15 wherein the converting means generates a data stream for reproduction containing a data stream for normal playback and a data stream for special playback,

and wherein the control data is contained in both the data stream for normal playback and the data stream for special playback.

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38. A digital video recording apparatus for outputting data for recording a desired service by receiving a transport stream comprising:

25 converting means for generating a data stream for reproduction containing control data for realizing interactive operations by selecting packets as to a desired service selected from the transport stream being received; and

recording means for recording the stream from the converting means on a recording medium;

30 wherein the converting means generates a data stream for reproduction containing a data stream for normal playback and a data stream for special playback,

and wherein the control data is contained in both the data stream for normal playback and the data stream for special playback.

39. The apparatus in accordance with claim 37, wherein the  
5 converting means makes control data for realizing interactive operations equivalent to the data stream for the normal playback so as to include into the data stream for the special playback.

40. The apparatus in accordance with claim 37, wherein the  
10 converting means generates the data stream for the special playback by omitting a part of the control data.

41. The apparatus in accordance with claim 33, wherein the converting  
15 means generates a data stream for reproduction containing a data stream for the normal playback and not containing a data stream for the special playback;

and wherein the reproducing means reproduces signals representing  
contents of services reproduced under the normal playback mode in  
accordance with the data stream for the normal playback when the apparatus  
20 is in the normal playback mode;

and wherein the reproducing means reproduces signals representing  
contents of services reproduced under the special playback mode in  
accordance with the data stream for the normal playback when the apparatus  
is in the special playback mode.

42. The apparatus in accordance with claim 41, wherein the  
25 reproducing means carries out an interactive operation equivalent to that carried out in the normal playback mode.

43. The apparatus in accordance with claim 41, wherein the  
30 reproducing means carries out an interactive operation different from that

carried out in the normal playback mode when the apparatus is in the special playback mode.

44. In a digital transmitting apparatus for transmitting a transport stream containing control data for realizing interactive operations:

wherein the apparatus transmits the transport stream so as to contain a special stream for special playback containing a control command for performing interactive operations in addition to a normal stream for normal playback.

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45. A recording/reproducing apparatus receiving digital broadcasting comprising:

receiving means for receiving a transport stream containing both a normal stream including control data for realizing interactive operations and a special stream for special playback;

converting means for generating a data stream for normal playback containing the control data in accordance with the normal stream as to a desired service selected from the transport stream being received and a data stream for special playback in accordance with the special stream;

recording means for recording the data stream and the stream for special playback both from the converting means on a recording medium as a data stream for reproduction;

readout means for reading out the stream for reproduction recorded on the medium;

operation handing means for handing operations made by an operator; and

reproducing means for reproducing a signal representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a receive mode and receiving a transport stream from the readout means when the apparatus is in a playback mode, wherein the reproducing means outputs the reproduced signals;

wherein the reproducing means carries out an interactive operation in which the reproducing means outputs an image for performing operations in accordance with control data contained in the transport stream being received when the apparatus is in the receive mode, the normal playback mode and a special playback mode.

46. A digital receiving apparatus for outputting data for recording a desired service by receiving a transport stream comprising:

receiving means for receiving the transport stream containing both a normal stream including control data for realizing interactive operations and a special stream for special playback;

converting means for generating a data stream for normal playback containing the control data in accordance with the normal stream as to a desired service selected from the transport stream being received and a data stream for special playback in accordance with the special stream; and

a recording data output terminal for providing the data stream for normal playback and the data stream for special playback both from the converting means to a memory device;

wherein the special stream contains a control command for performing interactive operations;

and wherein the data stream for special playback also contains the control command.

47. The apparatus in accordance with claim 44, wherein the special stream contains control data for performing interactive operations equivalent to that of the normal stream;

and wherein the data stream for special playback also contains control data for performing interactive operations equivalent to that of the normal stream.

48. The apparatus in accordance with claim 44, wherein the special

stream contains control data for performing interactive operations equivalent to that of the normal stream;

and wherein the data stream for special playback contains control data for performing interactive operations in which a part of the control data is omitted.

49. The apparatus in accordance with claim 44, wherein the special stream contains control data in which a part of the control data included in the normal stream is omitted;

and wherein the data stream for special playback contains control data in which a part of the control data included in the normal stream is omitted.

50. A digital video reproduction apparatus for reproducing services by reading out a stream for reproduction recorded on a recording medium comprising:

readout means for reading out the stream for reproduction recorded on the recording medium;

operation handing means for handing operations made by an operator;

and

reproducing means for reproducing a signal representing contents of the services by receiving the stream for reproduction from the readout means, wherein the reproducing means outputs the reproduced signals;

wherein the reproducing means outputs an image for performing operations in accordance with control data for performing interactive operations contained in the stream for reproduction, and performs interactive operations so as to change a signal representing contents of the services responding to an input of the operator when the apparatus is in a normal playback mode and a special playback mode.

51. The apparatus in accordance with claim 50, wherein the

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reproducing means carries out an interactive operation equivalent to that performed in the normal playback mode when the apparatus is in the special playback mode.

5        52. The apparatus in accordance with claim 50, wherein the reproducing means carries out different interactive operations between the normal playback mode and the special playback mode.

10        53. The apparatus in accordance with claim 1, wherein the reproducing means not uses control data for interactive operations obtained at beginning of a special playback mode in a normal playback mode after carrying out the special playback mode if a service identifier at beginning of the special playback mode and a service identifier at end of the special playback mode are not coincide with each other when playback modes are  
15 switched to in a sequence of the normal playback mode, the special playback mode and the normal playback mode.

20        54. The apparatus in accordance with claim 1, wherein the reproducing means not uses control data for interactive operations obtained at beginning of a special playback mode in a normal playback mode after carrying out the special playback mode if a version of the control data at beginning of the special playback mode and a version of the control data at end of the special playback mode are not coincide with each other when  
25 playback modes are switched to in a sequence of the normal playback mode, the special playback mode and the normal playback mode.

55. In a digital transmitting apparatus for transmitting a transport stream containing control data for realizing interactive operations:

30        wherein the apparatus transmits the transport stream so as to contain information whether or not allowing special playback.



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56. A recording/reproducing apparatus receiving digital broadcasting comprising:

receiving means for receiving a transport stream in which information whether or not allowing special playback for a part of or whole of each service is assigned;

converting means for generating a data stream for normal playback and a data stream for special playback as a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received;

recording means for recording the data stream for reproduction from the converting means on a recording medium;

readout means for reading out the stream recorded on the medium; and

reproducing means for reproducing signals representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a receive mode, receiving the data stream from the readout means when the apparatus is in a normal playback mode and receiving the data stream for special playback from the readout means when the apparatus is in a special playback mode, wherein the reproducing means outputs the reproduced signals;

and wherein the converting means carries out one of not generates the data stream for special playback and bans to record the data stream for special playback on the recording medium even the data stream being generated when the information bans to carry out special playback.

57. A digital video recording apparatus for recording a desired service by receiving a transport stream comprising:

converting means for generating a data stream for reproduction containing a data stream for normal playback and a data stream for special playback by selecting packets as to a desired service selected from the transport stream being received; and

recording means for recording the stream from the converting means on a recording medium;

wherein the transport stream contains information whether or not allowing special playback;

5 and wherein the converting means carries out one of not generates the data stream for special playback and bans to record the data stream for special playback on the recording medium even the data stream being generated when the information contained in the transport stream bans to carry out special playback.

10 58. A recording/reproducing apparatus receiving digital broadcasting comprising:

receiving means for receiving a transport stream in which information whether or not allowing special playback for a part of or whole of each service  
15 is assigned;

converting means for generating a data stream for normal playback and a data stream for special playback as a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received;

20 recording means for recording the data stream for reproduction from the converting means on a recording medium;

readout means for reading out the stream recorded on the medium;  
and

25 reproducing means for reproducing signals representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a receive mode, receiving the data stream from the readout means when the apparatus is in a normal playback mode and receiving the data stream for special playback from the readout means when the apparatus is in a special playback mode, wherein the reproducing means outputs the  
30 reproduced signals;

wherein the converting means makes the data stream for special

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playback so as to contain information whether or not allowing special playback therein;

and wherein the reproducing means not carries out special playback of a part of the service where the information indicative of not allowing special playback even when the apparatus is in the special playback mode.

59. A digital video recording apparatus for recording a desired service by receiving a transport stream comprising:

converting means for generating a data stream for reproduction containing a data stream for normal playback and a data stream for special playback by selecting packets as to a desired service selected from the transport stream being received; and

recording means for recording the stream from the converting means on a recording medium;

wherein the converting means makes the data stream for special playback so as to contain information whether or not allowing special playback therein.

60. A digital video reproduction apparatus for reproducing services by reading out a stream for reproduction recorded on a recording medium comprising:

readout means for reading out the stream for reproduction containing a data stream for normal playback and a data stream for special playback recorded on the recording medium; and

reproducing means for reproducing a signal representing contents of the services by receiving the stream for reproduction from the readout means, wherein the reproducing means outputs the reproduced signals;

wherein the transport stream contains information whether or not allowing special playback;

and wherein reproducing means not carries out special playback if the information indicative of not allowing special playback even when the

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apparatus is in the special playback mode.

61. A recording/reproducing apparatus receiving digital broadcasting comprising:

5 receiving means for receiving a transport stream in which information whether or not allowing special playback for a part of or whole of each service is assigned;

converting means for generating a data stream for reproduction in accordance with packets as to a desired service selected from the transport stream being received;

10 recording means for recording the data stream for reproduction from the converting means on a recording medium;

readout means for reading out the stream recorded on the medium; and

15 reproducing means for reproducing signals representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a receive mode, receiving the data stream from the readout means when the apparatus is in a normal playback mode and receiving the data stream for special playback from the readout means when the apparatus is in a special playback mode, wherein the reproducing means outputs the reproduced signals;

20 wherein the converting means makes the data stream for reproduction so as to contain information whether or not allowing special playback therein;

25 and wherein the reproducing means not carries out special playback of a part of the service where the information indicative of not allowing special playback when the apparatus is in the special playback mode.

62. A digital video recording apparatus for recording a desired service by receiving a transport stream comprising:

30 converting means for generating a data stream for reproduction by selecting packets as to a desired service selected from the transport stream

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being received; and

recording means for recording the stream from the converting means on a recording medium;

wherein the converting means makes the data stream for reproduction  
5 so as to contain information whether or not allowing special playback therein.

63. A digital video reproduction apparatus for reproducing services by reading out a stream for reproduction recorded on a recording medium comprising:

10 readout means for reading out the stream for reproduction recorded on the recording medium; and

reproducing means for reproducing a signal representing contents of the services by receiving the stream for reproduction from the readout means, wherein the reproducing means outputs the reproduced signals;

15 wherein the transport stream contains information whether or not allowing special playback;

and wherein reproducing means not carries out special playback if the information indicative of not allowing special playback even when the apparatus is in the special playback mode.

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64. A recording/reproducing apparatus receiving digital broadcasting comprising:

receiving means for receiving a transport stream containing control data for realizing interactive operations;

25 converting means for generating a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received;

recording means for recording the stream from the converting means on a recording medium;

30 readout means for reading out the stream recorded on the medium;  
operation handing means for handing operations made by an operator;

and

reproducing means for reproducing signals representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a playback mode and receiving a transport stream from the readout means when the apparatus is in a receive mode, wherein the reproducing means outputs the reproduced signals;

wherein the playback mode includes a normal playback mode and a pause mode;

and wherein the reproducing means carries out an interactive operation in which the reproducing means outputs an image for performing operations in accordance with control data contained in the transport stream being received and changes the signal representing contents of the services being outputted in accordance with input of the operator when the apparatus is in the receive mode and the normal playback mode;

and wherein the reproducing means stop carrying out the interactive operation when the apparatus is in the pause mode.

65. A digital video reproduction apparatus for reproducing services by reading out a stream for reproduction recorded on a recording medium comprising:

readout means for reading out the stream for reproduction recorded on the recording medium; and

reproducing means for reproducing a signal representing contents of the services by receiving the stream for reproduction from the readout means, wherein the reproducing means outputs the reproduced signals;

wherein the reproducing means outputs an image for performing operations in accordance with control data for performing interactive operations contained in the stream for reproduction, and performs interactive operations so as to change a signal representing contents of the services responding to an input of the operator when the apparatus is in a normal playback mode;

and wherein the reproducing means suspends the interactive operations when the apparatus is in a pause mode.

66. The apparatus in accordance with claim 64, wherein reproducing  
5 means suspends display of the image when the apparatus is in the pause mode.

67. The apparatus in accordance with claim 64, wherein the  
10 reproducing means keep displaying the image when the apparatus is in the pause mode.

68. The apparatus in accordance with claim 64, wherein the  
15 reproducing means restarts the interactive operations when the pause mode is released.

69. A recording/reproducing apparatus receiving digital broadcasting  
comprising:

20 receiving means for receiving a transport stream containing control data for realizing interactive operations;

converting means for generating a data stream for reproduction containing the control data in accordance with packets as to a desired service selected from the transport stream being received;

25 recording means for recording the stream from the converting means on a recording medium;

readout means for reading out the stream recorded on the medium;

operation handing means for handing operations made by an operator;

and

30 reproducing means for reproducing signals representing contents of services by one of receiving a transport stream from the receiving means when the apparatus is in a playback mode and receiving a transport stream from

wherein the playback mode includes a normal playback mode and a pause mode;

and wherein the reproducing means carries out the interactive operation even when the apparatus is in the pause mode.

**readout means for reading out the stream for reproduction recorded on the recording medium;**

reproducing means for reproducing a signal representing contents of the services by receiving the stream for reproduction from the readout means, wherein the reproducing means outputs the reproduced signals;

30           and wherein the reproducing means carries out the interactive operation even when the apparatus is in the pause mode.



71. The apparatus in accordance with claim 69, wherein the reproducing means carries out the interactive operation upon receipt of the input even when the apparatus is in the pause mode.

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72. The apparatus in accordance with claim 69, wherein the reproducing means completes the operations under the control data being carried out at beginning of the pause mode and not accepts further inputs when the apparatus is in the pause mode.

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73. The apparatus in accordance with claim 69, wherein the reproducing means not carries out the operation under the control data depending on time when the apparatus is in the pause mode.

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74. The apparatus in accordance with claim 69, wherein the reproducing means carries out processing for external communications.

75. A computer readable program storage medium describing operations of a CPU for realizing any one of the apparatuses in accordance with claim 1 ~~through 75~~ which comprises:

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a converting circuit for selecting packets as to a desired service from the transport stream being received and outputting the packets as a stream for reproduction;

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a recording part for recording the stream from the converting circuit on a recording medium;

a readout part for reading out the stream for reproduction recorded on the recording medium;

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a decoder for fetching a signal representing contents of the services; and the CPU for at least controlling operations of the decoder.

76. A data storage medium reproduced with a digital video reproduction apparatus;

wherein the data storage medium records a stream for reproduction containing a normal stream for normal playback and a special stream, which includes data, selected from the normal stream.

77. A carrier wave for carrying a transport stream thereon, wherein the transport stream contains a stream for reproduction containing a normal stream for normal playback and a special stream, which includes data, selected from the normal stream.

78. A digital video reproduction method for reproducing services by reading out a stream for reproduction recorded on a recording medium, comprising the steps of:

reading out the stream for reproduction recorded on the recording medium;

carrying out an interactive operation, in which an image for performing operations is outputted in accordance with control data for interactive operation contained in the stream and changing a signal representing contents of the services being outputted in accordance with an input of the operator, in accordance the stream when the signal representing contents of the services is reproduced during a normal playback mode; and

not carrying out the interactive operation when during a special playback mode.

79. A digital video reproduction method for reproducing services by reading out a stream for reproduction recorded on a recording medium, comprising the steps of:

reading out the stream for reproduction recorded on the recording medium; and

carrying out an interactive operation, in which an image for performing operations is outputted in accordance with control data for interactive operation contained in the transport and changing a signal representing contents of the services being outputted in accordance with an input of the operator, in accordance the stream when the signal representing contents of the services is reproduced and outputted during both a normal playback mode and a special playback mode.

80. A digital video reproduction method for reproducing services by reading out a stream for reproduction recorded on a recording medium, comprising the steps of:

reading out the stream for reproduction recorded on the recording medium; and

carrying out an interactive operation, in which an image for performing operations is outputted in accordance with control data for interactive operation contained in the stream and changing a signal representing contents of the services being outputted in accordance with an input of the operator, in accordance the stream when the signal representing contents of the services is reproduced and outputted during a normal playback mode; and

suspending the interactive operation during a pause mode.

81. A digital video reproduction method for reproducing services by reading out a stream for reproduction recorded on a recording medium, comprising the steps of:

reading out the stream for reproduction recorded on the recording medium; and

carrying out an interactive operation, in which an image for performing operations is outputted in accordance with control data for interactive operation contained in the stream and changing a signal representing contents of the services being outputted in accordance with an

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input of the operator, when the signal representing contents of the services is reproduced and outputted in accordance the stream during a normal playback mode; and

carrying out the interactive operation during a pause mode.

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